Appln. of: Schreiber
Serial No.: 10/735,706
Filed: December 16, 2003

REMARKS

Reconsideration and allowance are respectfully requested.

Claims 1, 4-12 and 21-35 are pending in this application.

Claims 1, 4-12 and 21-35 stand rejected under 35 USC 103(a) as being anticipated by Clement, in view of AAPA and in view of Metals Handbook.

Claim 1 has been amended for clarity and requires, inter alia:

> heating the braze with a laser beam to a temperature at which the braze is molten but which temperature is below a melting temperature of the TiAl components, so that the braze adheres to the TiAl components;
> limiting heating of the TiAl components to an amount insufficient to 1) change ~~a~~the structure of the components; and~~or~~ 2) substantively change ~~the~~ dimensions of the components due to thermal expansion.

The benefits of the claimed method are set forth at page 3, line 31 through page 4, line 20 of the present specification (emphasis added):

> The use of a laser source for fusing the braze enables the heat or energy input to be controlled very precisely. Since the energy of the laser beam, the shape of the laser beam and its position, for example, can be set and controlled with high accuracy, the braze can be melted in a highly controlled manner. The joining process in accordance with the present invention can, therefore, be executed without, or with very low, heat input into the components to be joined. This is advantageous in that the structure of the components is not affected in an undesired manner. Furthermore, dimensional deviations of the components by heat expansion are precluded since virtually no thermal elongation or shrinkage occurs.
>
> The method according to the present invention is particularly well suited for the joining of TiAl sheets. Here, it is particularly advantageous that the sheets, or the components, can be butt joined. Lapped joints or similar joints can, therefore, be dispensed with, the production of these in components made of these materials under stringent accuracy requirements invariably incurring high effort and cost. In the state of the art, such lapped joints can only be produced by superplastic forming or hot forming, for example.

> The method according to the present invention allows protective-gas or vacuum furnaces to be dispensed with. The holding or clamping devices for the components can be of very simple design since joining is accomplished at room temperature and under atmospheric pressure.

The Examiner cites to the Metals Handbook as teaching "the main advantage laser brazing offers ... is its ability to produce a brazed connection locally without heating the entire part or component to the flow point of the brazing filler metal..." (emphasis added) and "another advantage is the high degree of control of the thermal energy of laser beams, including intensity, spot size, duration and ability to be located or positioned precisely".

While the Metals Handbook may teach that the entire part need not be heated to the flow point of the brazing filler metal and that laser brazing offers a high degree of control, nothing in the Metals Handbook excerpt teaches or suggests the requirement of claim 1 of "limiting heating of the TiAl components to an amount insufficient to 1) change a structure of the components and 2) substantively change dimensions of the components due to thermal expansion.

Further, the Metals Handbook specifically teaches heating of the base metal at the joint (last sentence of section entitled "Laser Brazing Process", on page 2), but does not teach or suggest limiting such heating of the TiAl components to an amount insufficient to 1) change a structure of the components. Neither the Clement reference nor the AAPA cure this deficiency of the Metals Handbook and therefore, the combination fails to render obvious amended claim 1.

Claims 1, 4-12 and 21-35 stand rejected under 35 USC 103(a) as being unpatentable over JP61095769 in view of EP0904881A1 and in view of AAPA.

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As previously noted, EP0904881 is a French counterpart to Clement, both claiming priority to the same priority application. Unless the Examiner specifically points out something to the contrary, and it is not believed that he has, this EP reference would not appear to disclose anything beyond that which is disclosed in Clement. Thus, this rejection appears to be a rejection under Clement in view of JP61095769 in view of AAPA, unless the Examiner can specifically state the reasons why such is not correct.

First, although not specifically cited in this rejection, the Examiner again relies on the Metals Handbook in this rejection for the same teachings as in the above rejection. See the last sentence on page 3 of the Office Action. For the same reasons as given above, the Metals Handbook is deficient in its teachings. The Japanese reference, abstract only being provided, specifically teaches heating the part 2 to be brazed but without melting it. This is merely redundant to the teachings of the Metals Handbook. Therefore, the deficiencies of the Metals Handbook are not cured by the other cited references and this combination fails to render obvious amended claim 1.

In view of this, it is respectfully requested that the 103 rejections of claim 1 be withdrawn.

Since all of the dependent claims depend from claim 1, they are believed allowable for the same reasons as claim 1, as well as for the further limitations contained therein, and it is respectfully requested that the rejections of these dependent claims be withdrawn as well.

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In view of the above, it is believed that the application is in condition for allowance and such a Notice is respectfully requested. If anything else is needed to place the application in condition for allowance, it is kindly requested that the undersigned be contacted.

Respectfully submitted,

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